extent, or 76,722 more than the preceding year; the vineyards destroyed, 474,760; or 101,317 more than the preceding year (1878).

There is unfortunately reason to fear that the isolated points may join each other and the affected patches unite. The patches, whether distinct or uniting, increase about 15 kilometres every year; and since the increase in any direction is proportional to the time, the increase of area is as the square of the time. In other words, after 2, 3, 4, 5 years, the evil is increased 4, 9, 16, 25 times. By merely looking at a map showing the extent of the plague, one can form an idea of the invading march of the terrible insect.

Yet there are actually men of science in France who join in depreciating those who are employed to battle with this fatal disease. It is sad to see the reception met with by those who have sacrificed their time, health, and scientific reputation to undertake duties so beneficial to their country. "They are merely wasting their time," say they; "much better not have left their personal duties;" and, true enough, those of whom this is said have cruelly felt its truth. M. Dumas, however, is not one of those.

Several years ago a prize of 300,000 francs was instituted to encourage investigations as to the best remedy against the phylloxera. Much ingenuity was wasted, many absurd remedies proposed, and it is curious to note the substances which were lauded by the inventors. They were for the most part the same, mixed in different proportions—tars, sulphur, lime, soot, urine, phenic acid, and salts of copper or iron. Patient research and scientific study have alone produced certain results.

These results, however, were not accepted and acknowledged without difficulty. Objections were accumulated and many instances of partial failure were brought together, ill-will and inertia playing an important part in the business. Local influences, political opinions, and other extraordinary considerations, one after another, opposed or favoured the results which were gained. At present the question has once for all entered upon a better path, the charlatans and pretended vine-doctors having entirely lost their credit. We are in possession of four modes of treatment which are really efficacious, though they vary in their effects in different cases. The struggle therefore should be maintained.

The various conditions of application and the entirely different principles which the application follows explain the divergence of opinions and methods. The scientific remedy is given: practice will decide which of the four methods is at the same time most efficacious and most economical. This happy result must mainly be attributed to the Commission of the Academy of Sciences, which was presided over by M. Dumas, who was the very soul of it. This Commission sent "delegates," who severally studied special clearly-defined questions, like officers sent by a general to make a reconnaissance in a country.

The commissions instituted in the departments did much good work, especially that of Hérault, which contained several distinguished members, both vine-growers and scientists: MM. Marès and Planchon, Members of the Institute of France; M. Bazille, Senator; M. Vialla, &c. We must also notice particularly the Viticultural Station at Cognac, which was established by private subscription, after the English manner,—a thing of rare occurrence in France. It was M. Lecoq de Boisbaudran, now Member of the Institute, the discoverer of the metal *Gallium*, who first started the idea, and triumphantly realised it in his native town. The principal houses in the trade made it a point of honour to subscribe, and the expenses in four years reached a sum not less than 32,000 francs. It was there that the general experiments as to "insecticides" were made, in accordance with the simple method proposed by M. Cornu, Director of the Viticultural Station, in order to determine definitively what substances are powerless. This work of "clearing the way" necessarily occupied several years, the practical part being energetically carried out by M. Mouillefert, of the National School of Agriculture at Grignon, near Paris, sub-director of the Viticultural Station. Towards the end of the first year they began to distinguish clearly the small group of substances which alone should be utilised. Amongst them was carbon disulphide (CS_2), which had been indicated by Baron Thénard, abandoned and then eagerly resumed by the enthusiastic M. Monestier, and at last rejected in a general manner in the end of 1873 and during 1874.

The carbon disulphide by itself appearing too dangerous to human life, M. Dumas happily started the idea of using it in combination with sulphide of potassium, forming the sulpho-carbonate of potassium ($KSCS_2$), which is both a powerful "insecticide" and an energetic manure.

The conclusions reached by the experiments made at Cognac were published towards the end of 1874 in the Report of the Academy of Sciences (last quarter), and the author can still defend every one of them as they were then deduced, a rare circumstance in connection with the phylloxera.

Under the happy influence of the Minister of Agriculture, the vine-growers were grouped into "vigilance-committees" for watching, and "syndicates" for treating, the vines. Thus the indifference of some and unreasoning excitement of others were followed by energetic preparation for the struggle. At the end of 1878 there were sixty committees instituted in fifty-six departments, and now there are 221, embracing sixty-one departments. Some of them have obtained decidedly successful results, and thus furnished a powerful incentive for the others to persevere.

The expense of the applications is still considerable, but in any case the most valuable vines are now out of danger. The more common vines will at first cost a good deal, but we are confident that scientific skill will supply sulphate of carbon either free or in combination at a cheaper rate, and that practical experience will render its application more easy and less expensive. France will thus continue to produce her wines, and have the pleasure of offering them to her friends and neighbours. This, though apparently a mere wish, is an actual statement of fact.

MAXIME CORNU,
Delegate of the Academy of Sciences, and formerly
Director of the Viticultural Station at Cognac

NOTES

THE following are the arrangements for the Friday evening meetings of the Royal Institution of Great Britain before Easter, 1881:—January 21, Warren De La Rue, D.C.L., F.R.S., Sec. R.I., The Phenomena of the Electric Discharge with 14,400 Chloride of Silver Cells; January 28, Dr. Andrew Wilson, F.R.S.E., The Origin of Colonial Organisms; February 4, Dr. Arthur Schuster, F.R.S., The Teachings of Modern Spectroscopy; February 11, Robert S. Ball, LL.D., F.R.S., The Distances of the Stars; February 18, Sir John Lubbock, Bart., M.P., D.C.L., F.R.S., M.R.I., Fruits and Seeds; February 25, Dr. J. S. Burdon-Sanderson, LL.D., F.R.S., Excitability in Plants and Animals; March 4, Sir William Thomson, LL.D., F.R.S., Elasticity viewed as Possibly a Mode of Motion; March 11, uncertain; March 18, Wm. H. Stone, M.D., Musical Pitch and its Determination; March 25, Alexander Buchan, M.A., F.R.S.E., Sec. Met. Soc. Scot., The Weather and Health of London; April 1, uncertain; April 8, Prof. Tyndall, D.C.L., F.R.S., M.R.I.

THERE is nothing that will tend to keep our learned societies in so wholesome a condition as healthy public opinion; it is therefore a matter for congratulation when we see a paper like the *Times* taking an interest in the organisation and work of the Royal Society, and giving its opinion on these, even when the justice of that opinion is questioned by many. From a leading article in the *Times* of Thursday last, on Mr. Spottiswoode's address, we take the following passage:—"The election to the vacancies in its ranks has of late years been too manifestly governed by a tendency to set up as an idol something which it is technically fashionable to call 'research,' and to ignore the far higher mental effort which is required for successful ratiocination. A man sets to work with a microscope and a test-tube, performs a number of curious experiments, and announces an interesting discovery which can neither be confirmed nor refuted by any one who does not follow precisely in his tracks. Such an experimenter, before now, has been rewarded by the privilege of placing the letters F.R.S. after his name; although, when the privilege had been conferred beyond recall, it may have been shown that his 'research' was undermined by the neglect of some essential precaution, and that his conclusion was erroneous. On the other hand, the man who gathers up the scattered facts ascertained by others, and founds upon them a weighty and important generalisation, is not on that account thought worthy of the Fellowship; and if he desires to obtain it is almost compelled to engage in some colourable 'research' as a means of gratifying his wishes. The principle thus acted upon is as much a mistake as it would be to glorify a carpenter or a mason and to ignore an architect; and it points to a narrowness of view which might profitably give place to a more accurate sense of relative proportion. The award of a medal to Prof. Lister, notwithstanding the great and direct utility of his work, is possibly an indication that better counsels may in time be expected to prevail."

WE understand that the Rev. Osmond Fisher has in the press, and will shortly publish, a new work entitled "Physics of the Earth's Crust." The volume will contain selected and revised portions of papers which have appeared at various times in the *Transactions* of the Cambridge Philosophical Society and other scientific publications, together with new matter. Mr. Fisher will in some chapters apply mathematical methods, but there will be found much matter calculated to interest those readers who do not care for that mode of reasoning.

THE meeting of the British Medical Association for the year 1881 will be held at Ryde, in the Isle of Wight, to which locality the Association has received a cordial invitation from nearly the whole of the medical profession in the island. Mr. Benjamin Barrow, an old and much-respected practitioner in Ryde, has been appointed president-elect. The Council of the Town of Ryde have passed a unanimous resolution that the whole of the Corporation Buildings, which are numerous and spacious, shall be placed at the disposal of the Reception Committee. There is every reason to believe that the many beautiful private grounds in the Isle of Wight will be thrown open to the Association. The president will give a garden party to the members and residents in the island. A *soirée* will be held in the Town Hall and adjoining buildings. The address in medicine will be given by Dr. John Syer Bristowe, London, of St. Thomas's Hospital; the address in surgery will be given by Mr. William Dalla Husband of Bournemouth, Consulting Surgeon to the York County Hospital; and an address in obstetric medicine by Dr. John G. Sinclair Coghill of Ventnor. Such has been the spirit with which the movement has been taken up by the Members of the Association and profession in the Isle of Wight and Ryde that the meeting bids fair to rival any previous meeting both in science and pleasure.—The following grants in aid of scientific investigation for the year were made, viz.:—Dr. McKendrick and Committee, Glasgow, for a continued investigation on anæsthetics, 25*l.*; Dr. Gerald Yeo, London, on the efficacy of the antiseptic method in injuries of the brain, 50*l.*; Dr. Shin, London, for a continued investigation on parasitic skin diseases, 25*l.*; Mr. W. North, London, for a continued investigation on the relations which exist between nitrogenous egesta and muscular work, 50*l.*; Dr. D. J. Hamilton, Edinburgh, an investigation on the pathology of the brain, 30*l.*; Mr. Watson Cheyne, London, an investigation on the relation of organisms of septic disease, 25*l.*; Dr. Augustus Waller, London, an investigation on the time and relations of muscular contractions in the human body in health and disease, 20*l.*; Dr. Alexander Ogston, Aberdeen, a continued investigation on the relation between bacteria and surgical disease, 10*l.*; Dr. Newman, Glasgow, a renewed grant in aid of an investigation on the functions of the kidney, 10*l.*; Drs. Braidwood and Vacher, Birkenhead, to illustrate the third and final report on the life history of contagium, 20*l.*

IN the Vienna Gewerbeverein, Herr F. Siemens has been lecturing on his "regenerative gas-burner," in which the departing heat of the flame serves for pre-heating the air and the gas to be consumed. The products of combustion of the flame, collected in a short chimney, flow away cold, either into the room or to the open air. The light, according to measurements, has twice to three times the illuminating power of the best-known gas-burners, and is remarkably white and steady.

THE death is announced of Dr. Lauder Lindsay, F.R.S.E. F.L.S., at Edinburgh, on November 24, at the age of fifty. Dr. Lindsay's name must be known to our readers as an occasional contributor to our columns. Dr. Lindsay did some good work in botany and geology, and took special interest in the subject of intelligence in the lower animals. In 1870 he published a "History of British Lichens," and quite recently we reviewed his work on "Mind in the Lower Animals," published last year.

ON Monday a deputation, consisting of Mr. Ernest Hart, Prof. Chandler Roberts, F.R.S., Col. Festing, the Rev. H. V. Le Bas, the Rev. S. A. Barnett, Mr. S. Hadley, Mr. W. R. E. Coles, and others, had an interview with the Lord Mayor at the Mansion House, to interest him in the efforts now being made by the joint committees of the National Health and Kyrle Societies to reduce the mischief arising from the present excessive production of smoke in the metropolis. Mr. Ernest Hart said the Societies thought that a very great deal might be practically done to make the atmosphere in London as pure as that in Paris. It was proposed to conduct trials of the various kinds of fuel and to promote competitive testing of the appliances available at present, or which might become available, for the purpose of lessening the production of smoke. The smoke proceeding from the fires of private houses might be materially lessened by the use of improved apparatus, and that from factories might be abated with little interference with the manufacturing interests if the employers would only co-operate with the Societies towards that end. There was about to be an exhibition at South Kensington of the different kinds of apparatus and fuel, which would be practically tested. They now asked the Lord Mayor to let them bring the matter before the notice and attention of the citizens by means of a meeting at the Mansion House on the subject. The Lord Mayor thought it a matter well deserving the public attention, and he would gladly allow a conference in the Long Parlour of the Mansion House on Friday, January 7.

IN connection with the subject of Incandescent Electric lighting it is of interest to notice in the New York *Times* an account of an experiment in this direction. At a reception given on the evening of November 17 by Prof. Henry Draper to the members of the National Academy of Sciences, a part of his house was lighted by the Maxim light. The laboratory was lighted by eight Maxim electric lamps, which were screwed into the chandeliers in place of the ordinary gas burners. The large laboratory, it is stated, was as light as the open fields at noonday, and there was no flickering or unsteadiness in the light. In shape the lamps are precisely similar to those used by Edison, but H. S. Maxim, who holds the patent on them, claims to have improved on Edison's plan, by making his lamps more permanent. Like Edison, he uses a carbonised fibre, in the form of a horseshoe, but unlike him, does not inclose this fibre in a vacuum, and considers that his lamp is complete. An atmosphere of gasoline vapour is introduced into the glass globe which holds the carbonised fibre, and in this atmosphere the fibre is gradually heated by the electric current. As soon as the heat reaches a sufficient intensity it begins to decompose the hydrocarbon of which gasoline vapour is composed, and if there are any weak spots in the filament the freed carbon is deposited there and strengthens the fibre. A current of increasing intensity is thus carried through the carbonised fibre, which constantly grows at the expense of the gasoline vapour, and finally becomes of a uniform power of resistance throughout its whole length. The gasoline vapour is then pumped out of the globe and the lamp is ready for use. The Maxim lamps are said to give a larger amount of light than any incandescent lamp hitherto constructed. According to experiments made by Prof. Morton, of the Stevens Institute, it appears that the lamps have produced light at the rate of 600 candles per horse-power of current. Each of the eight lights in Prof. Draper's laboratory had an illuminating power of about fifty candles. The electric current for the lamps was furnished by a Maxim dynamo machine, which was driven by a gas-engine of four-horse power, located in the laboratory. The Maxim machine has an armature something like that of the Gramme machine, while its field magnets resemble those of the Siemens machine.

THE recent importations into this country of cinchona bark from Jamaica and the high prices realised have been the means of causing a considerable amount of attention to be drawn to this new source of supply. From a document recently drawn up by Mr. Morris, Director of Public Gardens and Plantations in Jamaica, it seems that the results of the cinchona sales for the year 1879-80 have been as follows:—Quantity of bark shipped 27,399 lb., gross amount realised £5380 9*s.* 6*d.*, net sum realised £5146 8*s.* 7*d.* Without going into details it will suffice to show the superiority of Jamaica bark over that from Ceylon by saying that for red "root bark" the highest price for Jamaica produce was 4*s.* 8*d.* per pound for "good root" as against 2*s.* 6*d.* for "good root" from Ceylon, thus showing an advantage in favour of Jamaica root bark to the extent of 2*s.* 2*d.* per pound. Thus again for "twig and small ordinary" bark of *C. succirubra* Ceylon produce obtained from 2½*d.* to 1*s.* per pound as against 10½*d.* to 1*s.* 6*d.* per pound for similar bark from Jamaica. From this, together with the fact that an enormous number of plants are now in stock in Jamaica, the future of cinchona cultivation in that island seems to be ensured.

IT is stated in an American contemporary devoted to electrical topics that a call has lately been made on the shareholders of the Edison Electric Light Company to the amount of sixty dollars per share. The object of the call was "to meet the expense of recent experiments."

IMPORTANT trials have been made lately on the Rhine, in order that navigation may be carried on at night by means of the electric light. It is hoped that soon satisfactory results will follow, which will probably develop an entirely new phase in river navigation.

IN the neighbourhood of Agram, at the mountainous places St. Simon and Remete, some shocks (of slight importance) were felt up till December 1. At Dortmund, on November 27, a considerable shock occurred at 5.50 a.m. It lasted several seconds, and the direction was south-south-east, barometer 756, temperature 7° R. A rather smart shock of earthquake, accompanied by a loud subterranean noise, was felt at Schaffhausen on Wednesday night last week. The Rev. Dr. Dixon of Beragh, near Omagh, writes that a slight earthquake shock was distinctly felt there on the afternoon of Sunday, November 28, at about half-past five. The peculiar character of the shock was most marked. It appeared to travel from south-west to north-east.

IN the course of his experiences as a medical missionary among the Mongols the Rev. James Gilmour has gathered some interesting information regarding their inner life, but perhaps the most curious item is that Mongol doctors are not entirely unacquainted with the properties of galvanism. It is said that they are in the habit of prescribing the loadstone ore, reduced to powder, as efficacious when applied to sores, and Mr. Gilmour states that one man hard of hearing had been recommended by a lama to put a piece of loadstone into each ear and chew a piece of iron in his mouth!

THE French Great Western Company instituted last year a competition in the large hall of St. Lazare Station, between the Jablochkoff and Lontin light and the gas company. The conclusions were in favour of the electric light, but the gas company having declared that they would abolish entirely the special price charged on the Great Western Company if they declared in favour of gas, the gas lamps have been restored.

Les Mondes gives the following old recipe for testing the age of eggs, which, it thinks, seems to have been forgotten. Dissolve 120 grammes of common salt in a litre of water. An egg put in this solution on the day it is laid will sink to the bottom; one a day old will not reach quite to the bottom of the vessel; an egg three days old will swim in the liquid; while one more than three days old will swim on the surface.

THE *Launceston Examiner* (Tasmania) of October 6 contains some account of a shaft that had been sunk for a well at a brewery at Launceston, near the river. Little water was met with, but some interesting observations were made. The shaft had been sunk to a depth of ninety-eight feet. The strata passed through are of a very interesting character. For a little over thirty feet strong clay was met with, then deep beds of compact sand separated by bands a few inches thick of fine quartz conglomerate. About forty feet from the surface considerable quantities of partially carbonised wood were found, extending thence to the bottom of the shaft. The wood is evidently pine, and appears to be identical with that found in the shaft of the Working Miners Company at Brandy Creek, at a similar depth below the river. The grain of the wood is perfectly distinguishable, but the transverse fracture is black and lustrous like jet. The trees must have been of a large size and very abundant, and the great mass of earth that has accumulated above their remains enables one to form some idea of the vast period that has elapsed since they flourished. The great depth of the stratum in which this fossil wood occurs proves that its deposition must have proceeded without material interruption through vast periods of time. It is a little curious that though vegetable remains occur so profusely in the freshwater deposits of the Windmill Hill, and at considerable depths both here and at Beaconsfield, no trace has yet been found of contemporaneous animal life.

THE *Cape Argus* for November 6 contains a full report of a paper read at the Cape Philosophical Society by Mr. J. G. Gambie, containing many useful suggestions as to important problems, especially in meteorology and geology, that await solution in South Africa. Residents and travellers in South Africa would no doubt find the paper suggestive.